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**Retirement Decisions and Adequacy of Post-Retirement Income:
an International Study**

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Retirement Decisions and Adequacy of Post-Retirement Income: An International Study

Abstract

Many European countries, faced with demographic challenges owing to ageing populations and their socio-economic consequences, have had to implement pension reforms with common factors. This paper examines microeconomic evidence on provisions and adequacy of post-retirement income of ageing populations across Europe by using data from the Survey of Health, Ageing and Retirement in Europe (SHARE) and the Family Resources Survey (FRS). This article presents the key changes introduced by European governments to pension systems and illustrates how recent reforms aim at increasing the sustainability of state pension systems by introducing and encouraging private schemes. Within the analysis, the authors suggest that unless a complementary relationship between public and private pension exists, where private components are added to the basic level of state pensions and do not substitute them, the adequacy of retirement income will be affected.

Keywords: Adequacy of post-retirement income, public and private pensions.

Introduction

In recent years there has been a trend towards sustainable pension systems with policy makers and academics alike showing an increasing interest towards private institutions playing a role in complementing public provisions and individuals being offered incentives to save for retirement. The sustainability of pension systems has provoked discussions in many western countries about the reform of funded pension schemes, the age of retirement, and the adequacy of post-retirement income. PAYG systems have been and still are the foundation of all state pension schemes, where pensions are paid out of current income which in turn depends on the number of individuals in employment (Barr, 2006). Many developed countries have made adjustments to render pay-as-you-go (PAYG) pension systems sustainable and others have encouraged pension systems privatization with a greater emphasis on individual savings (Pedersen, 2004). The argument in favour of fully funded systems (as opposed to PAYG), where retirees receive pensions linked to their contributions over their lifetime, is one of long term sustainability, given that the proportion of population aged 65 and over for the next 50 years is projected to almost double in OECD countries, with a slower increase in those countries with large shares of ageing population such as Italy, Belgium, the UK, France and Germany (Whiteford and Whitehouse, 2006).

The implementation of different pension systems across Europe reflects the importance of different pensions objectives within each government. Some countries, for example, in central and Southern Europe have adopted a Bismarckian system whereby state pensions are viewed as part of a social insurance tradition, where they constitute high proportions of welfare expenditure. Many Scandinavian countries and the UK, on the other hand, have opted for the Beveridge model, where only a minimum income is guaranteed by the state pension and where private contributions to funded pensions are encouraged (Baldwin, 1990; Kolmar, 2007). Over the past twenty years, however, a number of pension reforms with common themes have taken place in many European countries with the simultaneous objectives of increasing pension systems sustainability and protecting pensioners from falling into poverty. The most recurrent reforms were the tightening of conditions for pension eligibility; the indexation of pension benefits to prices rather than earnings; the link between pension

benefits and changes in life expectancy; the introduction of private Defined Contribution (DB) schemes, where the levels of pension benefits depend on the amount members contribute to the schemes.

The concept of poverty needs to be addressed before defining income adequacy: poverty has been defined different ways, and we define as poor those individuals having resources (typically income) below 50 or 60 percent of the median income (Eurostat 2005). To measure post-retirement income adequacy we, therefore, compare the levels of income post-retirement to poverty rates among the elderly, as also indicated by Engen et al. (2005). Since the countries included in our analysis are all part of EU15, we have used the 60% of median national income as poverty threshold as indicated by the Eurostat guidelines (SPC 98/31/2) as well as by Duncan *et al.* (1993) and Whelan *et al.* (2003). The median definition has the advantage over the mean value of providing a better estimation of income, by avoiding small numbers of very high incomes.

We use the concept of income poverty to evaluate the adequacy of income post-retirement for European pensioners and compare post-retirement median incomes at national level as found in our analysis to national poverty thresholds¹ and to benchmark the 11 countries together². The issue of adequacy of income after retirement has been the subject of a number of studies in the UK and the US for many years (Bodie, 1990; Bernheim, 1993; Banks et al. 1998; Tanner, 1998; Banks et al. 2002 and Blake, 2004). Much of the past literature focuses on studying the changes in the living standards after retirement (Whiteford and Kennedy, 1995), by examining changes in income, expenditure or consumption, as suggested by Atkinson in 1985. The theory underpinning this methodology is the life-cycle model put forward by Modigliani and Brumberg in 1954 and again by Ando and Modigliani in 1963. Other methods for measuring retirement income adequacy include use of replacement ratios, and examining the levels of consumption after retirement, as demonstrated by Banks et al. (1998). The measurement of consumption, however, can be problematic. Banks et al (1998) found that unanticipated shocks around the time of retirement can affect consumption levels of retirees,

¹ We apply the EUROSTAT threshold of 60% the median income levels for 2004.

whereby a majority of individuals seem to have expectations about their future retirement income that exceed the effective pension entitlements. The problem with the use of replacement ratios is that the payments of lump sums skew the ratios themselves.

Within this article we demonstrate the relationship between private and public provisions of retirement income, income post-retirement, and the adequacy of post-retirement income in different European countries. We use data from the survey of Health, Ageing and Retirement in Europe (SHARE) and the Family Resources Survey (FRS). Our study comprises eleven countries, which are all part of the European Union: Austria, Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden and the UK. Amongst the countries included in our sample, some have very different traditions with regard to pension provision, saving patterns and retirement decisions. For all the countries above, the data used was collated in 2004 and published in 2005.

The three main issues addressed in this article are: a) the differences in public and private income components within EU countries; b) evidence of a substitution or a complementary relationship between private and public pensions and its consequences on the levels of total income enjoyed by pensioners; c) the possible consequences of current pension systems on the adequacy of retirement income in the countries examined. We use Pedersen's (2004) definitions of public and private sources of retirement income for comparative reasons, whereby a public pension system is a state-provided retirement income that covers all those in employment, while a source of retirement income is defined as private if coverage and benefits of the scheme are the results of decisions taken by private agents, and therefore it includes individual and occupational pension schemes.

This article is structured into four sections. In the first section we review the relevant theoretical issues on the roles of public and private pensions and the recent changes in pension reforms in the European countries examined. In the second section we examine the issue of retirement income adequacy and illustrate the methodology used to assess income

² Whereby for the European benchmark we use the median total income post-retirement from the 11 countries analysed.

adequacy. In the third section we present our analysis and the results of our empirical study and in the final section we conclude by presenting our findings.

Background theories and existing research

Academics have been investigating the roles of public and private pensions in developed economies for a number of years (see Feldstein and Siebert, 2002; Bud and Campbell, 2000; Disney, 2000). One of the key questions asked is whether higher degrees of social and economic equality are achieved in systems where public provisions represent a more significant component of retirement income than private pensions. Past literature refers to different theoretical viewpoints on the roles and social value of public and private pension systems. On the one hand, there is the view that low public provisions of income post-retirement are substituted by private provisions and vice-versa, this is also in agreement with the life-cycle theory (see Pedersen, 2004), while on the other hand some studies claim that the two types of retirement income provisions can be complementary. An OECD report published in 2001 argues that despite different countries attributing different roles and degrees of importance to public and private pension schemes, the results in terms of replacement income and post-retirement wealth are similar which implies that individuals see public and private pensions as substitutes. Amongst studies that support this view many have shown that a substitution effect exists within a specific country or a specific age group (Munnell, 1982; Attanasio and Brugiavini, 1999), and some have analysed the relationship between public and private pension provisions across a number of countries (Pedersen, 1997; Disney, 2000; OECD Report, 2001).

Many studies, however, show that the substitution effect and more generally the relationship between public pension wealth and private savings is not straightforward. A complementary relationship between public and private pensions is supported by a number of academics that have shown that a more generous public pension system might, in some cases, lead to a faster growth in private pensions (Dobbin and Boychuck, 1996). Attanasio and Brugiavini (1999) found in their study on the effects of the 1992 Italian pension reform known as the “Amato” reform which distinctly decreased future pension entitlements, that a clear crowding

out effect only exists for heads of households aged between 30 and 50, while no evidence could be found for those nearer retirement or for younger generations. This and other studies (Dobbin and Boychuck, 1996) have prompted some authors to question the substitution effect between public and private provision of retirement income. For example, Pedersen (2004) investigates the public and private pension mix across nine OECD countries and finds that there is no clear or consistent evidence of a substitution effect across different countries over a ten-year period, spanning from the mid 1980s to mid 1990s.

Financial provisions in Europe

It is widely accepted that the public pension system is one of the major components of the welfare state in Europe, however, the extent to which public pensions are seen as a means of social and economic equality varies remarkably across different European countries. One of the main systems is the Bismarckian welfare tradition, initially adopted in Germany in the late 19th century, and later embraced by many other countries with a social insurance tradition (such as Austria, France, Italy, Spain, Greece) in central and southern Europe (Baldwin, 1990; Ferrera, 1996). The Bismarckian tradition sees public pensions as a form of social insurance and strongly relates earnings and contributions over the lifecycle to expected benefits. In these countries the first tier, state-run PAYG pensions with a redistribution element, is predominant and often takes the form of targeted or minimum pension plans (paying higher benefits to poorer pensioners, for example in Austria, and aiming to stop pensions falling below a minimum level, usually linked to the national poverty threshold, as in Greece and Spain and Italy) or of social assistance (like in Germany) whereby general welfare benefits are used to protect poor retirees (OECD, 2005). The second tier in the countries adopting the Bismarckian model takes on the role of insurance or savings and is a mandatory membership to a publicly rather than privately funded Defined Benefits (DB) scheme. This is the case in Greece and Spain, while Germany uses a public points system where points are earned and accumulated on the basis of individual earnings for each year of contribution and then converted into annuities at retirement. France currently uses a mix of public DB and points system. Scandinavian countries such as Denmark and the Netherlands have adopted the Beveridge model, while Sweden and the UK use a mix of the Bismarckian

and Beveridge models whereby a minimum pension is paid together with an earnings-related pension (Pedersen, 2004). The Beveridge tradition focuses on the provision of a basic pension (first tier) using means-testing or flat rate benefits and paying the same amounts to retirees according to the number of years in employment. Within the countries adopting the Beveridge tradition there are still marked differences in the level of minimum income guaranteed, with Denmark, Sweden and the UK providing a combination of flat rate and means-tested benefits, while the Netherlands opted for flat rate benefits.

For younger and future retirees this typically means lower public pension levels which in the Netherlands and, to a lesser extent, in Denmark are compensated by private pension provisions (mainly occupational pensions). The second tier in countries adopting the Beveridge model is constituted of privately managed DB (in the Netherlands) or DC schemes (in Denmark), while Sweden has opted for a mix of private DB and more recently DC schemes together with public notional accounts, where contributions earn a notional interest rate linked to a macroeconomic variable and are converted into annuities at retirement (OECD, 2005).

Latest pension reforms

In recent years, following the recommendations included in the World Bank report published in 1994, the pension systems of many European countries have undergone considerable changes. The following analysis underlines common traits as well as differences in the major pension reforms over the last ten years. A common trend is that the public provision of retirement incomes has been decreasing and these changes are likely to shift the responsibility for post-retirement income to the individuals. This in turn could lead to possibly lower incomes for poorer individuals or for those in more vulnerable groups, for example, those with interrupted work histories, typically comprising of women (Ginn and Arber, 1999; Warren *et al.* 2001; Rowlingson, 2002).

The major reforms that have taken place so far can be classified into parametric and systemic reforms, where the former have affected the pay-as-you-go (PAYG) systems by changing some of the elements of those systems such as accrual of pension entitlements, increase in

the age at which benefits are received or increase in contributions necessary to receive benefits, while the latter has implied that some countries have abandoned the PAYG defined benefit (DB) model in favour of defined contribution (DC) schemes, therefore changing the nature of pension provision. Amongst the countries in our analysis Sweden and Italy have recently been adopting non-financial defined contribution (NDC) schemes, while France, Austria and Germany have not completely moved towards a NDC system, but they have implemented radical changes to their PAYG systems. France, for example, has introduced a link between number of contributions (in years) and life expectancy (Legros, 2006).

Parametric reforms can have a considerable impact on estimated public spending, for example, the German government in 2001 estimated an increase of 5.5 percent in public spending for pensions over the next 50 years, but after the reforms were put in place in 2001 the new forecast for the same timeframe has gone down to 1.7 percent (Zaidi *et al.* 2006).

Most of the countries examined have implemented parametric reforms rather than systemic reforms, which would have meant an overhaul of the systems in place.

Table 1 here

Table 1 summarises the main parametric reforms introduced by the European countries examined. The parametric reforms are divided into 5 categories: retirement age, contribution rate, contribution requirement, benefit indexation, pension formula. In some cases, countries like Italy, that have carried out systemic reforms as well as parametric ones are also in the Table, this is because here the old schemes still apply to older cohorts of workers.

Retirement age

One of the most frequent reforms undertaken has been the change in retirement age. This reform, though politically difficult to push forward, tends to be more easily justifiable than reductions in generosity, as it can be linked directly to the increase in longevity. In many cases, the reform has simply involved the equalisation of the legal retirement age for men and women. Amongst the countries under scrutiny, only Italy has increased the retirement age for

both genders, while Denmark lowered it from 67 to 65, although a recent government proposal suggested it should be increased to 66. The German Government is similarly considering increasing the state pension age from 65 to 67 and in the UK the Government has recently accepted the results of an independent pension commission in the UK, which has recommended the extension of the full pension retirement age in the UK (DWP, 2006).

Contribution rates and contribution requirements

Although politically difficult, reforms of contribution rates can be used to ease public finances in view of the increase in life expectancy for populations in Western Europe. Changing contribution requirements for eligibility to pension benefits is one of the most common changes analysed across the European countries - it has been a backtrack on the early retirement schemes quite popular in the 1970s and 1980s. Belgium, Denmark, Germany, France, Italy, Austria and Spain have all undergone changes to increase contribution requirements for early retirement or deductions for taking up pensions before the normal retirement age. Furthermore, many countries, like Austria, Belgium, France and Italy have seen an increase in the number of minimum contributions necessary to qualify for maximum pension.

Benefit indexation

In the past many countries moved away from allowing current pensions to be in line with earnings. Since 2005, most EU countries allow benefits to be in line with inflation, with the UK being the exception. The United Kingdom is moving in the opposite direction having adopted price linking in the early 1980s. This is primarily due to the increasing gap between basic state pension and average earnings, likely to render many future pensioners dependent on means tested pensions. A handful of countries changed their benefit indexation during the period 1995 – 2005, however, many countries had already put in place similar changes prior to 1995. Most pension systems in Europe nowadays are no longer characterised by earnings-linked pensions but by price-linked pensions with the result of reducing the cost to Treasuries. Amongst the countries in Table 1, Austria moved to price-indexed pensions while Germany introduced a 'sustainability factor', linking annual pension indexing to changes in the ratio

of pensioners to workers.

Pension formulae

To extend working lives and discourage early retirement, countries like Greece, have increased entitlements to those who work beyond certain ages, or have encouraged people to work longer by reducing accrual rates. Some countries have modified the accrual rates according to the earnings, with France and Sweden, for example, having higher accrual rates for those on higher salaries. Changes in the pensionable salary have also been common in Europe, with many countries limiting the determination of pensionable salary to the final few years of a career, when workers would usually be at the top of their earnings history. Recently this period has been prolonged so that the wage replaced by the pension may no longer be representative of the final salary. It needs to be noted that this reform is more likely to harm those with steep earnings career, but will have less effect on those on low-incomes. Other countries, like France, have increased this period to be more in line with the required contribution periods.

Empirical analysis

Differences in public and private income components within EU countries

We define an individual as retired if he or she define themselves as retired or if they have received a public pension in the preceding 12 months combined with retirement from economic activity (Gough and Arkani, 2007). The choice to consider self selection was made primarily to eliminate the effect of different effective retirement ages in the respective countries. Those who did not define themselves as 'retired' but did receive either a public or private (employer, etc) pension were also included in our sample. Furthermore, SHARE allows researchers to distinguish between public and occupational pension sources, whereby public provision of retirement income is constituted by old age public pension, public pension and early retirement, public injury insurance, public pension of reversibility, public pension of invalidity and war public pension. To calculate the amounts received as private pension

provision we have included: private or employer's pension and early retirement, insurance for disability, and pension of reversibility as also illustrated in Table 2.

Table 2.here

The SHARE database allows researchers to carry out an income analysis at individual level and it offers the possibility for a homogeneous cross-national analysis, which would otherwise be rendered difficult by countries' idiosyncrasies. The picture we illustrate shows a static examination of the countries in question.

Figure 1 here

According to Figure 1, which shows the public and private pension coverage, in countries under the 'Beveridge' system a much higher proportion of the retired population receives some sort of private pension, with the UK being the country where private retirement income is most widespread with 68 percent of those in retirement benefiting from a private pension. Amongst those countries that have traditionally adopted a 'Bismarckian' model, the evidence shows a much lower private pension coverage partially compensated by a generally higher public pension coverage, which in Germany, Spain and Greece reaches 99 percent of the retired population. An interesting result is obtained for France, where 52 percent of those in retirement are receiving a private source of income. France is close to the 'Bismarckian' model by tradition, however its private sector pension system is a two-tiered structure with mandatory occupational schemes that complement the Basic Insurance pension, which means occupational pension plans are well established amongst private sector employees (Srinivas *et al.*, 2000). The results for Spain and Greece show that less than 2 percent receive a private pension, therefore suggesting that the vast majority of those in retirement rely almost entirely on the state pension.

Adequacy of retirement income

The income poverty line level for the ten European countries together stood at €8817 in 2004 (median values), which is the equivalent of €735 monthly income. Figure 2 shows the median income values of public, private and total pension incomes and how each of the countries examined compare to their income poverty line.

Figure 2 here

A complementary effect between public and private provisions for retirement income can be identified in countries such as Denmark, the Netherlands, France and, to a lesser extent, Sweden. In these countries the level of public pension is either in line with the European median, like in the case of France, or higher, like in Sweden, Denmark and the Netherlands and total pension is far greater than state pension supporting the existence of a complementary effect between public and private sources. The graph also shows how the Netherlands have clearly the highest pension income of all the countries examined due to a very high level of private provision, whereas the level of public pensions is just above the European median level. The data for Belgium shows a significant similarity to the median values for the eleven countries examined, with the total pension being above the poverty threshold. Amongst all the countries under scrutiny, Italy and Spain show levels of median total pension below their national poverty thresholds, while the countries where pensioners receive retirement income well above the poverty lines are Austria, Sweden, the Netherlands, France, Denmark and Belgium. In Germany and Greece the levels of pensions are just slightly above their national poverty lines. Further, the graph indicates that in countries where public pensions are well above the total median value, such as Denmark, the Netherlands, Sweden and France, private pensions play a prominent role in contributing to post-retirement income. This is in agreement with the view that public and private pension provisions are complementary. We also note, however, that in countries where traditionally there have been fewer incentives to invest in private pensions, such as Spain and Greece the number of pensioners receiving income from private provisions is extremely low (below 2 percent), which

indicates that the vast majority of pensioners rely solely on state pensions in these countries. Germany and Austria, on the other hand, are countries where the substitution effect is stronger, with relatively high levels of public pensions and remarkably low levels of private pensions.

Conclusions

Within this article public and private provisions of income post-retirement and the overall levels of retirement income for eleven European countries have been examined. Building on Pedersen's (2004) research we demonstrate the lack of evidence of a clear substitution effect between public and private components of retirement income. Although public pension provisions are still a major component of retirement income in many countries, private provisions are more significant, in terms of amounts received by pensioners, in countries with a Beveridge tradition, with the provision of public flat-rate benefits, such as the Netherlands, Sweden and Denmark and the UK. Evidence shows that the Netherlands, Denmark and Sweden are the countries with the highest proportions of those in retirement receiving a private pension and median private pensions greater than public pensions. In direct contrast to this, in countries of Bismarckian tradition, such as Austria, Belgium, Germany and Italy the proportion of pensioners drawing their retirement income from private sources is considerably lower (going from 5.1 percent in Germany to 3.3 percent in Austria), while for Greece and Spain the numbers indicate that pensioners tend to rely almost solely on public pension provision.

We go on to conclude that in terms of adequacy, countries where total retirement incomes are well above the national poverty line also happen to be the countries where public and private pensions seem to have a complementary role, and we find no clear evidence in support of a crowding out effect. For example, this is observed in the case of Denmark and Sweden, countries where public pensions are highest compared with elsewhere but also where private provisions are widespread amongst large proportions of the retired populations and increase the total median income considerably above the respective national poverty lines. The absence of such an effect entails that in countries where public pensions are low and private

pensions are not yet widespread amongst the retired population, for example Greece, Spain and Italy, the total retirement income is either below or marginally above the poverty threshold.

Our findings further suggest that where a complementary effect between public and private sources of retirement income is coupled with a sufficiently high private pension coverage, the total median level of income lies well above the poverty line. This, however, is dependent on the level of basic state pension, as demonstrated by the differences between the high total incomes in the Netherlands and Denmark on one hand and the lower median total income in the UK on the other. In the Scandinavian countries, where private pensions are a strong component of income post-retirement, public pensions are also generally the highest amongst the countries examined. It is worth noting here that the Netherlands, Denmark and Sweden have adopted policies that have favoured employees staying in work until later in life. In doing so these countries have systematically kept the proportions of retired over those in work lower than in countries like Austria, Italy or Greece where the policies adopted until very recently tended to favour early retirement. Despite the many parametric reforms that have taken place in Germany, Austria and Italy, the outcomes of these reforms are still uncertain. For example, the median level of private pensions in Germany is still very low while in Austria and Italy private pensions still play an extremely limited role, if any, for the vast majority of pensioners.

This research contributes to the study of adequacy of post-retirement income across Europe. Due to the constraints of our analysis we examined income post-retirement for all ages, however evidence suggests that a more meaningful examination of this issue would ensue from grouping the retired population by age. An interesting question for future research could be whether the recent changes implemented in countries such as Italy, Greece, Germany and Austria will lead to greater fairness of pension systems or, as some are predicting, possible increase in the poverty rates amongst pensioners.

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Table 1: Major reforms in the rules and regulations underlying the old-age pension systems

Country	Parametric reforms between 1995 and 2005				
	Retirement Age	Contribution rate	Contribution requirement	Benefit indexation	Pension formula
Austria	✓		✓	✓	✓
Germany	✓	✓	✓	✓	
Sweden					
Holland		✓			
Spain			✓	✓	✓
Italy	✓	✓	✓		✓
France			✓		✓
Denmark	✓	✓	✓		
Greece	✓			✓	✓
Belgium	✓		✓		✓
UK	✓	✓			✓

Source: adapted from 'MISSOC Comparative Tables' from 1995 to 2005. International Social Security Association (2006) and 'Social Programmes throughout the World', various editions.

Table 2 : public and private pension components

Public pension components	Private pension components
Old age public pension	Private or employer pension
Public pension and early retirement	Private or employer pension and early retirement
Injury insurance	Private or employer insurance for disability
Public pension of reversibility	Private or employer pension of reversibility
Public pension of invalidity	
War public pension	

Figure 1: Public and private pensions coverage

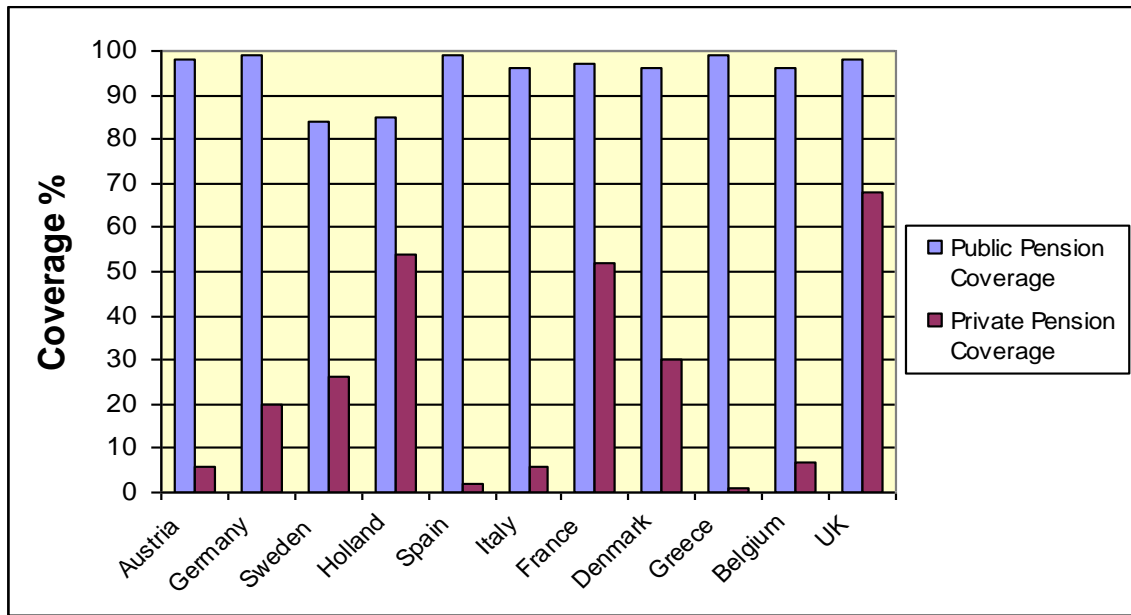
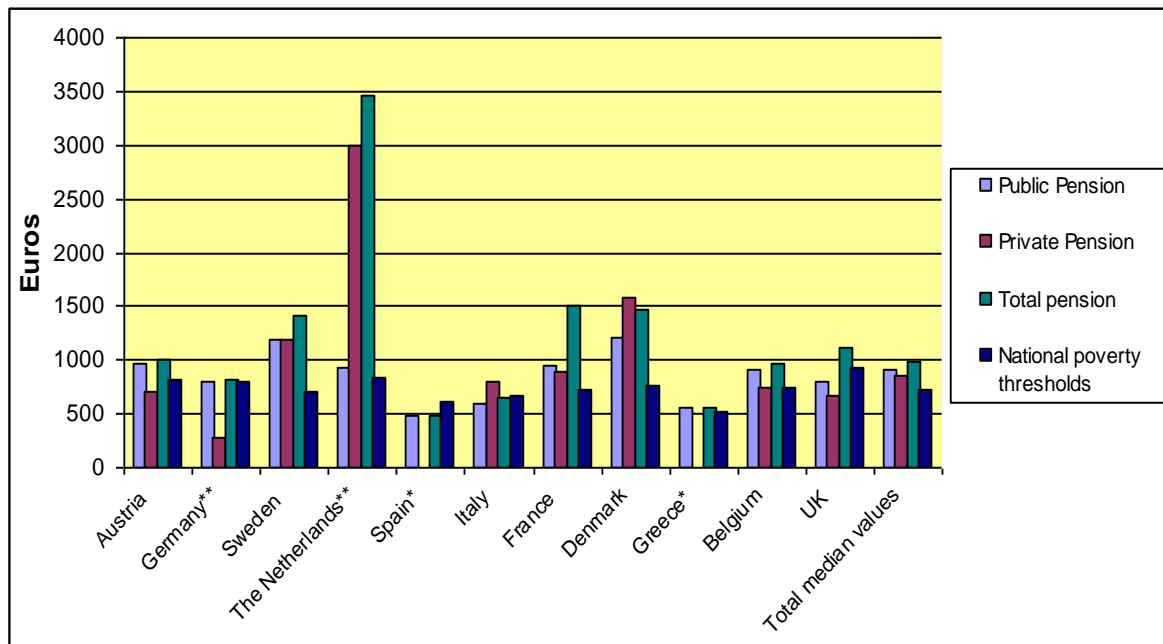


Figure 2: Amounts of public and private pensions in Euros (median values)



* The median values for private pensions here cannot be considered valid because of lack of data

**Poverty thresholds are calculated on 2005 data.